

REMARKS

Claims 1, 3-9 and 11 have been rejected under 35 USC 103(a) as being unpatentable over U.S. patent no. 6,448,185 ("Andideh").

Claims 10 and 12 have been rejected under 35 USC 103(a) as being unpatentable over Andideh in view of U.S. patent no. 6,222,269 ("Usami").

Claims 13 and 15-30 have been rejected under 35 USC 103(a) as being unpatentable over Andideh in view of U.S. patent no. 5,045,870 ("Lamey").

Applicants respectfully traverse these rejections because the cited references do not disclose or suggest all the limitations of any claim, as the following analysis shows.

Independent claims 1, 13 and 22 each recite a first barrier layer deposited on a substrate and a second barrier layer of silicon carbide deposited on the first barrier layer. The Office action (page 3) admits that Andideh does not teach forming a second barrier layer on the first barrier layer, and then cites Usami as teaching this, with layer 6 being equivalent to the first barrier layer and layer 7 being equivalent to the second barrier layer. However, these layers of Usami are not barrier layers. Usami's layer 6 is an insulator and layer 7 is an etch stop layer (see column 7 lines 43-45, with 'stopper layer' defined as an etch stop layer at column 3 lines 47-65). A barrier layer is defined, through common industry practice and at page 5 paragraph 0011 of the specification, as a layer that prevents an unacceptable amount of metal from diffusing from the metal interconnect into the dielectric. The fact that a barrier layer may contain material that also acts as an etch stop is a useful property that may be possessed by some (but not all) barrier

materials, but is not within the definition of a barrier layer and is not relevant to the claims. Further, Usami never teaches the use of silicon carbide.

Lamey is cited as teaching a second barrier layer of silicon carbide on a first barrier layer of silicon nitride. However, the first barrier layer of Lamey is not deposited on a metal interconnect layer deposited on a substrate, nor does Lamey teach a dielectric layer on the second barrier layer, both of which are claimed limitations. Further, although Lamey uses the term 'barrier layers', Lamey refers to these barrier layers as barriers to the corrosive properties of the ink used in the invention of Lamey (see column 6 lines 57-60). There is no motivation in Lamey to use these layers to prevent diffusion of metal from the metal layer into a dielectric, as required in claim 1, since Lamey does not position the barrier layers between a metal layer and a dielectric layer.

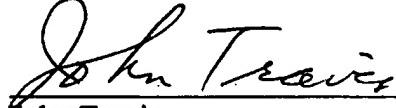
The remaining pending claims depend from claims 1, 13 and 22, and therefore contain the same limitations not disclosed or suggested by the cited references.

**CONCLUSION**

Applicants submit that the application is now in condition for allowance, and indication of allowance is respectfully requested. If fees or credits are found that are not otherwise covered, please charge or credit Deposit Account No. 02-2666.

Respectfully submitted,  
BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

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John Travis  
John Travis  
Reg. No. 43,203

12400 Wilshire Blvd, Seventh Floor  
Los Angeles, California 90025-1026  
(512) 330-0844

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